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Pablo Selaya

Neda Trifkovic

Vincent Leyaro

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University of Copenhagen

Faculty of Social Sciences

Department of Economics

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Gender altruism and attitudes towards violence against women*

Pablo Selaya, University of Copenhagen
Neda Trifkovic, University of Copenhagen
Vincent Leyaro, University of Dar es Salaam

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Abstract

We construct measures of *gender altruism*, or the propensity of an equal allocation towards the other gender, in a series of dictator and ultimatum games. We compare different types of fishing societies in rural Tanzania, and find (a) systematically lower levels of gender altruism in lake-fishing villages compared to sea-fishing villages, and (b) a higher tendency for participants in lake-fishing villages to justify violence against women. Our findings provide experimental evidence supporting the idea that differences in cultural norms about gender equality shape individual attitudes towards violence against women.

Keywords: Inequality, violence against women, altruism, equality, dictator game, ultimatum game, fishing societies, Tanzania.

JEL Classifications: O13, J16, C93

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1. Introduction

Violence against women is more prevalent in Africa than in other parts of the world (WHO, 2013), and it is even more prevalent in Tanzania than in many other countries in this region.[1] Estimates show that every second woman in Tanzania has experienced physical or sexual violence at least once in her lifetime (WHO, 2005; MoHCDGEC *et al.*, 2016). Among women who had ever been injured by a partner, one half reported that they needed health care for an injury at least once (Ellsberg *et al.*, 2008). Even though the high level of prevalence of violence against women is known across the country, the prevailing gender norms accept women's subordination, and even justify male violence towards women (Laisser *et al.*, 2011).[2]

A large number of studies has looked into the origins of domestic violence. Modern socio-economic and institutional determinants of violence against women have traditionally received an important amount of attention (see, e.g., Rao, 1997; Castro, Peek-Asa and Ruiz, 2003; Anderberg *et al.*, 2016). More recent studies have started to focus on historical and cultural elements of social norms. Some of the main results in this recent literature show that a part of the large differences in gender norms and attitudes about gender roles observed across the globe today can be attributed to characteristics of traditional livelihoods and traditional family structures (see, e.g., Alesina, Giuliano and Nunn, 2013; Tur-Prats, 2019, respectively).

As it is the case with other cultural norms, gender norms are likely to have emerged, at least in part, as response or adaptation to specific local conditions.[3] For example, Alesina et al. (2013) show that differences in traditional agricultural practices from the past shape gender attitudes today. Leyaro et al. (2017) support the idea that traditional practices in rural economies serve as a source of cultural differences in local gender norms, but also show that they matter as a source of differences in actions and attitudes about violence against women. In particular, Leyaro et al. (2017) find systematically less violence against women in traditionally sea-fishing areas than in traditionally lake-fishing, agricultural, or pastoralist societies in Tanzania. They propose that the likely

[1] The country stands out in the African region as one of the countries with a significantly higher level of non-partner sexual violence and sexual abuse during childhood than the average country (WHO, 2005).
[2] Even though women in Tanzania are socialized to tolerate domestic violence, it has become easier in recent years for women to report, get help, and suggest preventive measures against domestic violence (Laisser *et al.*, 2011).
[3] Research in psychology supports this idea, by showing the potential of local ecologies to shape cultures, and of cultures to influence the development of personalities (Triandis and Suh, 2002).

mechanism are cultural norms shaped by characteristics of the sexual division of labor, which in sea-fishing areas give a much more prominent and egalitarian role to women, in comparison with other traditional livelihoods. In this paper, we present an empirical test of this idea using a lab-in-the-field setting.

Specifically, we test how gender equality norms affect attitudes about violence against women across lake- and sea-fishing societies, which differ in terms of workplace organization and particularly in norms of cooperation, trust and their capacity for cooperation (Gneezy, Leibbrandt and List, 2016). To this end, we construct a measure of *gender altruism*, based on three different behavioral games. We measure *gender altruism* as an indicator taking value 1 if a player sends the same amount to a male and a female recipient. We also measure a gender gap as the difference in the amounts sent to male and female recipients, and a gender equality gap as a difference in the amounts sent to female recipients in different games.

Our main results, based on variations of the dictator and ultimatum games played with 120 participants in six traditionally fishing villages in Tanzania, reveal a robust association between weaker gender equality norms and a higher tendency to justify violence in lake-fishing societies, as opposed to sea-fishing villages. In order to disentangle the direction of causality between cultural attitudes towards equality and attitudes towards violence against women, we use the geographic location of each village as an instrument of cultural gender equality attitudes. Following Leyaro et al. (2017) and their idea that women in sea-fishing societies have a relatively stronger position in the economy of the household compared to women in lake-fishing societies, we propose that seashore location is a valid exogenous predictor of individual attitudes towards violence against women, because of its direct effects in shaping more favorable social attitudes towards gender equality. Our main results support this hypothesis, showing that the geographic location of sea-fishing villages predicts the presence of more egalitarian gender attitudes in those locations, and that this, in turn, maps into lower levels of justification of violence against women.

Our results add experimental evidence to the literature examining the historical and cultural origins of gender norms and violence against women (see, for instance, Gneezy, Leibbrandt and List, 2016; Tur-Prats, 2019; Alesina, Brioschi and La Ferrara,

2021), by showing that differences in cultural norms of altruism and attitudes about gender equality, or differences in *gender altruism*, hold explanatory power for differences in attitudes about violence against women.

The remainder of the paper is organized as follows. Section 2 describes the theoretical framework. Section 3 describes the field setting, while Section 4 gives details about the experimental design. Section 5 shows our estimation strategy. Section 6 presents the results, and Section 7 our conclusions.

2. Theoretical framework

In previous research, Leyaro et al. (2017) integrate research in economics and anthropology to propose the idea that attitudes and practices of violence against women partly originate in differences in the basic subsistence problem across societies, and in the characteristics of the sexual division of labor for solving that problem in each society. In particular, they compare traditional livelihood characteristics for sea-fishing, lake-fishing, agricultural, and pastoralist societies, and argue that traditional sea-fishing societies have a more egalitarian sexual division of labor, and a more egalitarian and diversified allocation of activities related to the basic economy of the household to women, compared to the rest.

Their main argument relies on the characteristics of sea-fishing economies. As documented by research in anthropology, sea-fishing societies enable women to be more independent and resourceful, by allowing them to acquire local skills for work that are complementary to activities outside the local economy, and in non-fishing and non-agrarian sectors. This essentially provides women in sea-fishing areas with larger shadow wages outside the traditional local economic activity of the household, which ultimately may help to sustain higher degrees of independence and bargaining power for women, and thereby reduce within-household inequalities in general, and the incidence of domestic violence against them in particular.

As explained in more detail in Leyaro et al. (2017), traditionally agricultural, pastoralist, and lake-fishing societies, do not share the same type or level of egalitarian characteristics as sea-fishing societies. These other societies seem to instead sustain norms that give men a relatively larger and a more visible role within the economy of

the household. A clear example, for instance, is in the comparison between lake- and sea-fishing villages made by Gneezy et al. (2016), who find lower levels of cooperation and trust among lake fishermen than among sea fishermen, and propose that they relate to larger the larger amount of activities that have to be undertaken in group in areas of sea-fishing.

2.1 Behavioral measures of altruistic behavior

Among behavioral games, the dictator and the ultimatum games are two protocols commonly used to measure the level of altruistic behavior.

The dictator game helps to build measures of the tendency to be generous in anonymous one-shot interactions. It is typically administered with the aim of measuring specific aspects of individual social preferences, which characterize personal willingness to trade off individual gains for perceived moral rectitude or fairness (Levitt and List, 2007). That is, the level of donation in a one-shot dictator game provides a measure of generalized altruism unbiased by strategic or reputational concerns, and as such it has been used to measure the strength of egalitarian norms within and across societies (Cappelen *et al.*, 2007; Barr *et al.*, 2009). In terms of implementation, one player is allocated a sum of money and decides how to divide that amount between another player and him-/herself (Forsythe *et al.*, 1994). If senders in the dictator game were self-interested money-maximizers, they would not allocate anything to other players. In practice, they typically allocate an average of 20-30 percent of the budget to the other player, with the vast majority of them transferring a positive amount (Camerer, 2003).

The ultimatum game is a two-stage game, where the receiver has the power to punish the sender by rejecting a sum deemed too low or not acceptable in general, in which case both the sender and the receiver end the game with zero gains. If players are utility maximizers, senders should send amounts approaching zero, while receivers should reject any offer. In practice, neither of these predictions are typically fulfilled. Therefore, the ultimatum game is designed to capture differences in strategic behavior, and attitudes to fairness, related to equality, which play a significant role in determining the outcome of negotiations (Thaler, 1988).

2.2 Previous empirical studies on altruistic behavior

A number of studies has attempted to measure altruistic behavior through variations of the dictator and the ultimatum games, and has shown that they are robust tools to assess this aspect of societal behavior.

For example, Patton (2004) compares the results of the ultimatum game played by two ethnic groups (the Achuar and Quechua) in a remote area of the Ecuadorian Amazon. Even though these two groups share common hunting, fishing, gathering, and horticultural lifeways, they play the ultimatum game differently, proposing different accounts of what constitutes reciprocal fairness. The differences in the outcome of the game between these two groups are explained by differences in coalitional stability, whereby members of the less stable coalition have lower expectations that cooperative behavior will be reciprocated in the future.

Marlowe (2004) implements an ultimatum and a dictator game in order to study cooperation within a hunter-gatherer society in Tanzania. Even though various ethnographic studies regard the Hadza as one of the most egalitarian societies in the country, the author shows how they have made lower offers in both games compared to those typically observed in more complex societies.[4]

Gneezy et al. (2009) study gender differences in competition in a patriarchal (Maasai in Tanzania) and a matriarchal society (Khasi in India), and find twice as high competition rates among Maasai men than among Maasai women. The result is opposite in the matrilineal Khasi society. Their results emphasize the inheritance rules as one of the determinants of the observed gender differences in selecting into competitive environments. Focusing on different types of fishing subsistence in Brazil, Gneezy et al. (2016) find that people in lake-fishing areas tend to trust, coordinate group actions, and cooperate less than their sea-fishing counterparts.

Finally, Henrich et al. (2006) study human cooperation and preferences for administering costly punishment. Their experimental results show a common trait for 15 different populations they study, namely the existence of some willingness to

[4] For example, their offers were lower in smaller camps, which is interpreted as a possible combination of a greater desire to escape from constant sharing in small camps and a greater fear of punishment for not sharing in larger camps.

administer costly punishment under increasing unequal behavior. Whilst the magnitude of this punishment is not equal across populations, the authors find that costly punishment varies with altruistic behavior across populations.

Building on this type of results and evidence of the effectiveness of behavioral experiments to measure different cultural attitudes, we describe below two variations of the dictator game and a variation of the ultimatum game, that we use to construct measures of altruism and attitudes towards equality between genders, or a measure of *gender altruism* amongst our respondents.

3. Field and experimental setting

We selected participants for our experiment in six traditional fishing villages in Tanzania, three on the coast of Indian Ocean and three on the coast of Lake Victoria. These villages share several characteristics in terms of geography and overall organization. As it can be seen from Figure 1, both fishing societies are in similar distance to large cities, but they are not in close geographical proximity to each other (which helps to reduce concerns that people in the two different types of locations work in the same markets).

[Figure 1]

The main difference between the selected sea and lake fishing villages is that women are more likely to take a more prominent role in activities related fishing, distributing and marketing of fish, in the sea region. For example, women perform pre- and post-harvesting work, such as mending nets, collecting bait, preparing food for fishers, keeping accounts (Williams, 2008), and they also outnumber men in the processing and trading of fish (Weeratunge, Snyder and Sze, 2010). A recent study is congruent with those findings, and reports an increase in the number of women entering local fish markets in Zanzibar over the last years (Fröcklin *et al.*, 2013).[5]

Fishermen at sea and at lake also use different technologies to catch fish. The sea fisheries are divided into coastal and offshore. Coastal fisheries are predominantly

[5] This particular increased involvement of women in Zanzibar was probably due to the lack of alternative economic activities, and the need for all family members to contribute to household (Fröcklin *et al.*, 2013).

small-scale (artisanal), operating small dug-out canoes and wooden planked boats (Ministry of Agriculture, Livestock and Fisheries, 2016). In general, the level of motorization is very low. As well as supplying fresh fish into local markets, restaurant and hotel trade, the artisanal fishery supplies a modest export trade in higher value species such as marine crabs, lobsters, octopus, shrimps and squid. Smaller fish are usually dried or fried immediately after cleaning and packed into plastic containers or sacks for distribution to local and regional markets.

The offshore fishery is concentrated around species skipjack, yellowfin and big eye tunas, and other large pelagic fish such as shark, swordfish and marlins (Ministry of Agriculture, Livestock and Fisheries, 2016). The fleet comprises domestic industrial fishing vessels, foreign carrier vessels, purse seine vessels for processing tuna into cans and longline vessels for tuna, shark and swordfish.

Fisheries on Lake Victoria is also important – for example it accounted for 63% of all fish production from freshwater capture fisheries during 2013 (Ministry of Agriculture, Livestock and Fisheries, 2016). The main species of commercial interest are Nile perch, dagaa (freshwater sardine) and tilapia. While Nile perch is mostly exported, dagaa and tilapia are consumed locally. The division of labor between sexes is such that men tend to control the large-scale operations of high-value fish such as Nile perch, while women focus on the local market and low-value fish such as dagaa.[6]

Nile perch fishery has attained great importance over the past couple of decades. It is caught mostly from small wooden canoes and fished with gillnets and longlines. Collector vessels powered by outboard motors deliver the catch to traders and processors on landing sites. Only suitable size and quality Nile perch is processed into chilled and frozen export products. Dagaa fishery is mostly artisanal, using different types of gear including beach seine nets, scoop and lift nets and some encircling nets operated in deep waters. Fishing often includes attraction by artificial light obtained from kerosene pressure lamps attached to a float. The annual production is in the order of 130,000 tones, accounting for about 42% of inland fish production (Ministry of

[6] Fishing societies tend have a high involvement of women in processing and distribution in general (McGoodwin, 2001), but this type of differences can be observed in relation to different types of fishing or the exploited fish species. For example, Fröcklin et al. (2013) document that men tend to dominate the exploitation and marketing of high-value fish, while women focus on low-value fish, consistent with what we observe in lake-fishing villages, but not in sea-fishing villages.

Agriculture, Livestock and Fisheries, 2016). Once the fish has reached the landing sites, the carriers (usually women) transfer the catch from the boats to the drying area. The dagaa is sun-dried, either on the ground or on racks and then packed into sacks for distribution to local markets.

4. Data and experimental design

The data for this study come from behavioral games in the field and a participant survey, which took place in an experimental setting, over four weeks in January and February 2018. Our games are two variations of a one-shot anonymous dictator game, one which is played with 10,000 Tanzanian Shillings (TZS) per recipient, and one which is played only in *hypothetical* terms as a part of the survey; and a one-shot anonymous ultimatum game. All games are implemented with the intention to assess the level of altruism and perceptions of fairness among men and women in lake and sea-fishing regions of rural Tanzania.

The sequence of the activities in the experiment was to play the dictator game first and the ultimatum game second, and then conduct the survey, which included the hypothetical dictator game. Figure 2 shows the relationships and the number of participants in the experiment by village.[7] In each village, 40 women and 40 men were invited to participate in the study. Afterwards, 10 out of 40 women and 10 out of 40 men were randomly selected to be the sender in the dictator and the ultimatum games. Further 10 men and 10 women were selected to be the receiver in both games, and 10 were chosen as controls, receiving only a participation fee for completing the questionnaire. Therefore, in total we are able to compute the level of donations of 60 women and 60 men for all games.

[Figure 2]

Both men and women were invited through community leaders to participate in the study and were told that they could earn a participation fee of 5,000 TZS for around three hours of their time. Additionally, they were told they could earn up to 40,000

[7] The participants have also participated in a randomized intervention that included a screening of two videos on violence (one on domestic violence against women and one on violence against albinos) to randomly chosen male and female participants. The videos were always shown after the games. The details are available in Appendix A.

TZS for playing different games. This has, of course depended on the game and whether they were randomly selected to be a sender or a receiver.

At the beginning of the experiments, all participants obtained identifying codes to ensure anonymity, by drawing a piece of paper with their code from a box. Based on their code, they were assigned a role in the game and asked to wait in a group of other players with the same role. Before the start of the experiment, the games were explained to all participants and role-specific rules were repeated in smaller groups. The detailed protocol and the instructions are described in the Appendix A.

Men and women were physically separated during the experiment. Depending on the circumstances at the location, they were either in separate buildings, courtyards, or separate rooms at different sides of the same building. Two experimenters and two assistants were assigned to both the male and the female participant group in each session.[8] Written consent was obtained during the survey (described in section 4.3), as the first page of the questionnaire contained a participation statement. Among the respondents with limited literacy, the supervisor or an enumerator served as witness and signed the consent form in that capacity.

4.1. Key measures of gender egalitarianism

In any of the administered games, the level of donation from a woman to a man or from a man to a woman is likely to be affected by social norms and a range of unobservable individual characteristics. For example, poor individuals who play as senders may tend to allocate little to the receivers, even though they may be altruistic or egalitarian. In order to produce accurate measure of the individual degree of egalitarianism towards men and women, we check whether the level of donations are equal between sexes and build an indicator identifying when a sender made equal donations to women and men.

In practical terms, conditional on the level of donations to both men and women, we interpret the propensity of an equal allocation as an indicator of equality towards the other gender, or *gender altruism*. We also construct a measure of the gender gap in donations, measuring the difference in the amounts sent to the recipient of the same

[8] Before collecting the data, the entire protocol was pilot-tested with 40 participants in one village in the coastal region in Tanzania.

and the opposite sex. As a third measure of equality between sexes, we construct a measure of *constrained egalitarianism*, or the difference in the amounts sent to women in different games, each imposing different constraints on players. Here, we use the fact that players may behave differently when the rules of the game change, in particular comparing behavior in theory (i.e., during the hypothetical dictator game played on paper) and in practice when playing with real stakes, without and under constraints (e.g. during the ultimatum game by the threat of retaliation by the receiver).

4.2. The dictator games

Our first experiment is based on a one-shot anonymized dictator game, similar to that used by Forsythe et al. (1994). In our version of the game, participants were deciding on the amount of money to be shared with the same and the opposite sex. That is, male subjects were told that their task was to allocate money to any of the men from the male group and any of the women from the female group; and female subjects were requested to allocate money to any of the women from the female group and any of the men from the male group. Each sex was asked to first decide on the allocation to another unknown person of the same sex.

In our case, the sum to be distributed with another player was of 10,000 Tanzanian Shillings (TZS). Senders were asked to share that amount with a woman and the same amount with a man. The same hypothetical equivalent sum was used in the *theoretical* dictator game. The amount of 10,000 TZS corresponds to about 5 USD and is roughly equivalent to a month's rent of a simple two-room cottage in the sea-fishing area. [9] The games were anonymous, meaning that the identity of the sender and receivers with whom they have been matched to play is never revealed.

For the dictator game, each participant received one large envelope that contained four small envelopes. Two of the small envelopes contained 10 one-thousand TZS bills. The other two were empty and had to be used to send the donation to the female and the male receivers. All senders were instructed to place any number of one-thousand bills in the envelopes marked B and C (corresponding to the allocation to men and women,

[9] As another comparison: the minimum daily wage in the private sector in Tanzania was 3,846 TZS for agricultural services; 5,077 TZS for health services and 4,423 TZS in the trade, industries and commerce sectors in 2013.

depending on the sender's sex)[10], seal the envelope, drop it in a box, and leave. After the game, when all senders had deposited their envelopes, we matched their donation with a receiver from either male or the female recipient group that had the corresponding identification code. Participants were never told about this matching rule so nobody could be linked to their choices.

The *theoretical* dictator game was implemented as a part of the participant survey. Participants were asked how they would divide 10,000 TZS between themselves and a man, and how they would divide the same amount of money between themselves and a woman. To reduce a possibility that participants think that recipients are persons whom they know, we have added photographs of a Tanzanian man and a Tanzanian woman unknown to the participants – to keep close to the condition of anonymity of the recipient in the original dictator game.[11]

4.3. The ultimatum game

In the next part of the experiment, we implemented a variation of the ultimatum game in which the participants were asked to make the sharing decision based on the recipient's sex. In this game, participants kept the same roles as in the dictator game, i.e. senders were asked in which way they intended to share the allocated amount (10,000 TZS) with a receiver of the same and then of the opposite sex. This time, however, receivers had the power to reject the amount offered. If the offer was rejected, neither the proposer nor the receiver would gain anything; if the offer was accepted, the money would be distributed as proposed by the sender.

Contrary to the way in which the dictator game was played, proposers in the ultimatum game did not physically place the allocated amount in the recipient's envelope, but they wrote the amount they wished to send to the recipient on a blank "check". After receiving the check (the sender's offer), the recipient was asked to indicate on the same check whether she or he agreed or not to accept the offer. If the offer was rejected, recipients were asked to write the minimum amount they would have accepted.[12] The

[10] When the sender was a women, the envelope marked B was going to an anonymously paired female recipient and the envelope marked C was going to an anonymously paired male recipient. When the sender was a man, envelope B went to another man and envelope C went to another women. A more detailed information is available in the Appendix A.
[11] The persons in the photos had what are considered to be culturally common facial features to avoid bias on ethnical grounds. The exact wording and the layout of this question are shown in Figure A1 in the Appendix.
[12] An image of the check is shown in Figure A2 in the Appendix A.

recipient's decision was then communicated to the sender, and the payouts were made accordingly. Neither proposers nor receivers were aware of who they were playing with.

4.4. The survey

All participants were administered a short questionnaire that follows the Tanzanian Demographic and Health (DHS) survey module on violence, and in addition contains basic demographic questions. The survey was administered in person in a way that secured privacy so that other participants could not see respondent's answers. Participants who could read and write filled-in the questionnaire themselves with occasional clarifications from the survey team, while the illiterate participants were individually interviewed face-to-face by qualified enumerators.[13]

The violence module in both the women's and men's questionnaire contains five questions on justification of violence against women. The questions ask whether violence is justified in specific everyday situations in life, such as the wife going out without telling the husband about it, the wife neglecting the children, the wife arguing with the husband, the wife refusing to have sex with the husband, or burning the food. Based on these questions, we constructed five separate indicator variables and the overall *violence accepted* indicator that takes value one if the respondent justifies violence in any of the described situations, and value zero if none of the reasons for violence are justified. Following Reese-Webber (2008) and Cauffmann et al. (2000) who created an overall acceptance of dating violence score by summing the ratings across a range of justifications, we also constructed the *violence justification index*, a variable that counts different instances of violence justification. A higher score in this variable indicates a higher degree of acceptance of violence against women.

4.5. Summary statistics and sample balancing

The summary of the donations in both dictator games is shown in Table B1 in the Appendix B. In general, we observe a difference between the donations at the lake and at the sea for both sexes. We can also observe that men sent more to women than to men in both dictator games and that the opposite is true for female senders in the incentivized dictator game.

[13] The enumerators were employed as research assistants at University of Dar es Salaam and had experience with face-to-dace interviews.

Regardless of the sent amounts, our main interest is in relative amounts sent to participants of both sexes. As indicated by the average values, both gender altruism indicators based on the dictator game tend to be higher at the sea than at the lake for both male and female participants. The average value of the gender altruism indicator based on the theoretical dictator is always higher than the average value of the indicator based on the incentivized dictator game. The difference in average values is higher for women than for men, indicating a differential response to incentives by sex.

The summary of the donations in the ultimatum game is also shown in Table B1 in the Appendix B. Illustrating the role of the credible threat incorporated in the design of the game, we observe higher average values of the donations in the ultimatum than in dictator games. The average amount sent to male recipients by both male and female senders was significantly larger in the lake than in the coastal area. The gender altruism indicator derived from this game is significantly larger in the coastal than in the lake area when evaluated for male senders only (the indicator was not significantly different in the coastal and lake area for female senders).

The gender gap in donations is not significantly different in the lake and the coastal areas for women, but both measures of constrained egalitarianism take a larger value in the lake than in the coastal area. The average value of the constrained egalitarianism measure is negative because each time, the value sent to the recipient in the game that is less constrained is subtracted from the value sent in a game that is assessed as more constrained. Namely, the value sent in the theoretical dictator game is subtracted from the value sent in the incentivized dictator game and the value sent in the incentivized dictator game is subtracted from the value sent in the ultimatum game. It is assumed that the constraints imposed by the game (e.g. a threat of punishment in the ultimatum game) will motivate senders to send higher amounts to recipients. The lower average values of the in the constrained egalitarianism in the coastal area indicate greater gender equality compared to the lake area.

Table B1 in the Appendix B shows the average rates of acceptance of violence and the average values of the violence justification index. In our sample, both women and men tend to find various reasons to justify domestic violence. As many as 75% of female and

53% of male respondents believe that violence against women can be justified under specific circumstances. This holds in particular for 59% of women and 42% of men in the sample if the reason is neglecting the children. The second most frequently cited reason for domestic violence among men was wife going out without telling the husband (28%), whereas for women, it was arguing with the husband (47%). Women justify violence more than men in all instances apart from burning the food, where there are no statistically significant differences between women and men. The rates of acceptance of violence are significantly higher in the lake than in the coastal region among both women and men. In the lakes area, 83% of women and 63% of men are accepting of violence, whereas in the coastal area, 67% of women and 43% of men show the same tendency.

The average value of the violence justification index is about 1.5, indicating that respondents attribute violence to multiple causes. Following the pattern of the *violence accepted* indicator, the average value of the *violence justification index* is larger among women than among men. The average value of the *violence justification index* among women is close to two (1.88), whereas it nears one among men (1.08). The value of the index is significantly larger among men in the lake than in the coastal area.

Tables B2 and B3 in the Appendix B show summary statistics for the main participant demographic characteristics, such as age, schooling, household size, marital status, employment status, and religion. Men from the coastal region tend to have a larger household size (measured by the number of household members) and are more likely than women to have some sort of income earning activity in both the coastal and the lake area. There are no particular differences in terms of age, school attendance and marriage rates (indicated by having a marriage certificate) among men and women neither in the coastal area nor in the lake area. There are some differences in religious affiliations between the lake and the coastal area. In both the male and the female sample, there were more Muslims in the coastal and more Protestants in the lake area. There were also more Catholics and other religious affiliates among women in the lake than in the coastal area, indicating more religious diversity in the sample of women than in the sample of men.

Table B4 compares the senders and the recipients in the incentivized dictator game in terms of main demographic characteristics. On average, female receivers are older than female senders and the opposite holds for men. There are slightly more married men and women among the receivers than the senders; likewise, 11 percentage points more Catholics among male receivers, and 12 percentage points more Protestants among male senders than receivers. Even though the participants were allocated to the roles in the game randomly, the significant differences in some of the respondent characteristics indicate that we should control for age, marriage status, household size and religion in the regression analysis.

5. Estimation strategy

We compare individuals in sea-fishing and lake-fishing societies in terms of their degree of altruism towards men and women, and we use the differences that we find to ultimately study individual differences in attitudes towards violence against women.

To examine the impact of gender altruism on attitudes towards violence against women, we estimate two specifications. First, to determine whether equality norms towards other gander correlate with attitudes towards gender-based violence, we run ordinary least squares (OLS) regressions specified as:

$$y_i = \alpha + \beta E_i + \gamma X_i + e_i \quad (1)$$

In the first case, y_i the outcome of interest for individual i, is a dummy variable for whether any type of violence is accepted by the respondent (labeled as *violence acceptance*). This variable takes the value 1 if the respondent acknowledged agreeing with at least one of the five types of violence justification described in the previous section. The result of this estimation gives the effect at the extensive margin. In the second case, y_i is a *violence justification index*, or a variable that takes a value between 0 and 5, depending on the number of different causes of domestic violence the respondent indicated as justifiable in the survey. It is a count of instances when respondents justify violence in specific situations, such as (a) wife going out without telling the husband about it, (b) wife neglecting the children, (c) wife arguing with the husband, (d) wife refusing to have sex with the husband or (e) burning the food. The

result of an estimation with this dependent variable gives the effect at the intensive margin.

E_i denotes the three egalitarian indices we focus on. First, we estimate eq. (1) with the gender altruism indicator, which takes the value 1 if senders shared the endowment equally between the receivers of the same and the opposite sex (and the value 0 otherwise). The indicator is generated separately for each of the three games. In alternative specifications, E_i is the gender gap, defined as the difference in the amounts sent to the recipient of the same and the opposite sex, or the constrained egalitarianism, measured as the difference in the amounts sent to women in different games. We estimate equation (1) separately for each of the egalitarian indices generated from each game.

Randomization in the selection of participants and the allocation of tasks in the games reduces model dependence. However, in order to improve precision (and to ameliorate concerns about the presence of relevant unobservable correlates of both egalitarian and non-violent norms), we also present regressions with controls. Based on the summary statistics and the balance tests presented in Tables B2-B4 in the Appendix B, we select age, gender, household size, marriage status and religion as controls collected in the X_i vector. We also show estimations in which we control for the amount each participant sent to women and to men respectively.

Assuming that sea-fishing societies have a relatively more equal sexual division of labor and a more gender-equal allocation of activities related to the basic economy of the household than lake-fishing societies, the theory in Section 2 predicts a higher levels of gender altruism in the sea-fishing villages. If egalitarian attitudes towards men and women contribute to shaping attitudes towards violence against women, we should also observe lower levels of acceptance of violence against women in sea-fishing societies.

Despite the process of randomization and of our efforts to add controls for observable and unobservable covariates, the results from the equation (1) cannot be given a causal interpretation because of remaining concerns of endogeneity due to reverse causality. For example, it can well be the case that villages with strong norms against domestic

violence also promote norms for pro-sociality or generosity that drive individual attitudes. To address this concern, we propose a two-stage least squares (2SLS) estimator where the geographical location of the village serves as the instrument for the prevalence of gender altruistic norms. Based on Leyaro et al. (2017), we expect that villages located by the Indian Ocean should have relatively stronger norms for gender equality, because of the tendency of these type of societies to solve the substance problem with a relatively more egalitarian sexual division of labor at home, and that, conditional on covariates, the geographical location of villages provides a useful source of exogenous variation for the presence of gender altruism. In that case, the first-stage regression would be:

$$E = \alpha' + \beta' S_i + \gamma' X_i + \varepsilon_i \quad (2)$$

where S_i is an indicator variable that takes the value 1 if a village is located by the ocean, and the value 0 if it is located by the lake.

6. Results

6.1.OLS

Panel A in Table 1 shows the OLS results for associations between the acceptance of violence and the amounts sent to women and men in the three considered games. Even columns include controls for sex, age, age squared, number of household members, marriage and religion. The results from the incentivized dictator game show a significant negative association between the amounts of money sent to women and the acceptance of violence. In contrast, the association between the amounts of money sent to men and the acceptance of violence is positive. The results hold for both the indicator of acceptance of violence against women and the violence justification index. The results from the dictator game are partially corroborated by the results from the ultimatum game (row 1 in column 11).

In panel B, the main interest is in the indicator variable measuring whether an individual's donations in the dictator game were equal for men and for women (*gender altruism*). Focusing on the dictator game (columns 5 and 6), we show that participants sharing the endowment equally between their respective male and the female recipients are about 15% less likely to have positive attitudes about any form of gender-

based violence. The results are significant at the 1% level. The inclusion of controls (column 6) reduces somewhat the magnitude and significance of the coefficient, but it remains negative and significant at the 5% level. Concerning the violence justification index, we obtain the same sign of the coefficient, but it is no longer statistically significant. The results from the ultimatum game partially corroborate the results from the dictator game. The coefficient in column 9 indicates that more egalitarian individuals are 12% less likely to accept any justification of violence against women. The coefficient becomes more noisily estimated with the inclusion of control variables and loses its significance at the 10% level, but it remains negative, as shown in column 10.

Panel C reports the results from specifications which in addition to the equality indicator control for the amounts sent to men and women in each game. The inclusion of these controls increases the magnitude of the equality coefficient. In case of the acceptance indicator, we obtain that participants sharing the endowment equally between their respective male and the female recipients are 22% more likely to reject any justification of gender-based violence (column 6). In terms of the violence justification index, participants sharing their money equally score 0.73 less on the scale, indicating a lower acceptance for gender-based violence among individuals with stronger between-gender equality score in the dictator game. In addition, we obtain a high level of agreement with the results from Panel A. In all specifications, lower donations to women and higher donations to men in the dictator game are significantly related to higher acceptance of violence.

[Table 1 around here]

The results from the hypothetical dictator game are not significantly correlated with the acceptance of violence against women. Recalling that the theoretical dictator game is administered as a hypothetical answer to the question of differential donations between men and women in the survey questionnaire, this result may be a reflection that the main variable is contaminated with measurement error.

Table 2 shows correlations between acceptance of violence against women and the gender gaps, measured separately for each of the three administered games as the difference in the amount donated to a man and to a woman. We find that a larger bias against women (the larger the amount sent to a man is compared to the amount sent to a woman) is positively associated with stronger justification of violence against women in the theoretical dictator game, but the coefficients are not significantly different from zero. The results from the ultimatum game lead to similar conclusions, whereas in the incentivized dictator game, the justification of violence against women is higher when a smaller amount is shared with a woman compared to a man. This result indicates that a larger bias against women contributes to greater justification of violence against women.

[Table 2 around here]

Table 3 shows correlations between attitudes towards violence against women and two measures of constrained egalitarianism. First, focusing on panel A, we observe a negative relationship between the acceptance of violence and the gap between the hypothetical and the incentivized dictator game. There is also a negative correlation between the acceptance of violence at the intensive margin and the constrained egalitarianism from the incentivized dictator and the ultimatum games (column 7), but the result is not statistically significant when participant controls are included (column 8). Second, focusing on panel B, we observe a significantly negative relationship between the acceptance of violence and the gap between the incentivized dictator and the ultimatum game in which the amounts donated to other players in the game can be rejected if deemed too low, indicating the importance of retaliation in promoting more pro-social behavior. Our results show that the greater the threat of retaliation is, the lower the acceptance of violence will be, which implies that fear of retaliation may lead to more egalitarian outcomes between genders. Moreover, the results indicate that fear of material losses may decrease the dominant partner's bargaining position and contribute to eradicating harmful social norms even when their prevalence is widespread. This is consistent with other studies highlighting the role of increasing women's threat point in preventing intimate partner violence (Roy *et al.*, 2018).

[Table 3 around here]

Tables 1-3 support our main hypothesis, showing that an egalitarian sharing of the donation levels between men and women in behavioral games are related to less acceptance of violence against women. As argued above, despite randomization and the inclusion of controls, we cannot give the results in Tables 1-3 a causal interpretation immediately because of concerns of endogeneity due to reverse causality. In the next section, we present the results of the IV/2SLS identification strategy described in Section 5.

6.2. IV/2SLS

Table 4 shows the first and the second stage results for 2SLS estimations run using an indicator variable for villages located by the Indian Ocean as the instrument for the equality indices. The results show that a coastal location is a significant predictor of gender altruism only in the incentivized dictator game. The first stage regression in column (3) shows significant results at 1% level. In particular, seashore location increases the likelihood of equal donations between men and women by around 30 percentage points in the incentivized dictator game. The coastal location indicator is a noisier predictor of gender altruism in two other games.

[Table 4 around here]

With these results estimated in the first stage, we are able to identify a negative impact of gender altruism on the violence justification index. The result is robust to the inclusion of controls and significant at the 5% level. We find that perfect gender altruism decreases the violence justification index by 2.4. Given that the first stage regressions reveal that the proposed instrument is weak, we check whether we can confirm significance in the second stage by applying the method proposed by Moreira (2003). The confidence intervals and p-values of the Moreira (2003) test, which are robust to the presence of potentially weak instruments, are reported in Table 4 and indicate that the gender altruism coefficient predicted by seashore location is statistically significant at the 5% level in all cases.

For robustness, we also use the Lewbel (2012) 2SLS approach that relies on heteroscedasticity in the data to achieve identification and establish causality without

relying on an exclusion restriction. The results are shown in Table 5. Estimates in columns 1, 4, and 7 are created using external instrument (seashore village indicator, as in Table 4), estimates in columns 2, 5 and 8 are drawn from regressions using only internally generated instruments, while those reported in columns 3, 6, and 9 are drawn from regressions that combine our external instrument (seashore village indicator) with internally generated instruments. Overall, these results also reinforce the existing conclusion of a negative relationship between gender altruism and acceptance of violence against women. We find that perfect gender altruism is associated with lower violence justification (column 6). Participants sharing their money equally between sexes score 1.8 less on the scale, indicating a lower acceptance for gender-based violence among individuals with stronger between-gender equality score in the incentivized dictator game.

[Table 5 around here]

7. Conclusion

In this paper, we present an empirical test of the idea that cultural norms for equality between genders lead to lower tolerance of violence against women. To construct individual measures of the level of egalitarian attitudes towards men and women, we implemented simple adaptations of the dictator and the ultimatum games, and played these games in an experimental setting in six fishing villages in rural Tanzania, three on Lake Victoria and three on the Indian Ocean. Based on previous research, we conjecture that sea-fishing villages have the potential to sustain a more egalitarian and a less gender-violent environment.

Our measures of the individual degree of egalitarian attitudes towards men and women reflect equal donations to men and women in the different games. We propose that, conditional on the level of individual donations to women and to men, indices of equal donation represent valid measures of *gender altruism*.

Our results reveal higher levels of gender altruism in sea-fishing societies, and also a higher tendency for individuals in these villages to justify less violence against women. This result is consistent with previous evidence of differences in altruistic behavior across small societies in different parts of the world (Henrich *et al.*, 2006), and in

particular support the idea that more egalitarian attitudes among women and men are associated with less violence against women. Our results are also robust to controlling for various relevant individual characteristics .

Studying the direction of causality, our results suggest that more egalitarian gender norms lead to lower justification of gender violence, in particular when an option of retaliation is available – which indicates that policies supporting women's overall bargaining power are potentially associated with a lower prevalence of harmful social norms of violence against women. We also highlight that our results are in particular significant at the intensive margin, indicating that negative gender norms are likely to change incrementally and not to disappear at once.

Interpreting these findings in light of the hypothesis in Leyaro et al. (2017), these results indicate that local cultures that support equality in the sexual division of labor within the household (more prevalent across sea- than lake-fishing societies), are able to shape local cultures that promote gender equality and altruism, and that they even may have an important role in sustaining norms that help to reduce the justification of violence against women.

Our results are encouraging to explore further norms of cooperation and trust that may be complementary to norms of altruism, and which may help us to understand better how to contribute to the abandonment of violence against women.

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TABLES AND FIGURES

Table 1 Acceptance of violence against women and gender equality

	Hypothetical dictator game				Dictator game				Ultimatum game			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Extensive margin		Intensive margin		Extensive margin		Intensive margin		Extensive margin		Intensive margin	
Panel A: Amounts sent to women and men												
Sent to a woman	-0.007	-0.019	-0.019	-0.043	-0.063***	-0.078**	-0.283***	-0.324***	-0.037	-0.035	-0.211*	-0.161
	(0.033)	(0.035)	(0.115)	(0.122)	(0.022)	(0.032)	(0.080)	(0.104)	(0.035)	(0.048)	(0.109)	(0.140)
Sent to a man	-0.044	-0.018	-0.046	0.025	0.069**	0.081***	0.159	0.197*	-0.063*	-0.055	0.112	0.132
	(0.029)	(0.031)	(0.106)	(0.109)	(0.027)	(0.029)	(0.097)	(0.100)	(0.037)	(0.041)	(0.110)	(0.126)
R^2	0.02	0.12	0.01	0.16	0.07	0.18	0.11	0.21	0.05	0.14	0.03	0.15
Panel B: Gender equality in the amounts sent to women and men												
Gender altruism	-0.020	-0.012	0.101	0.169	-0.164***	-0.156**	-0.194	-0.172	-0.129*	-0.093	0.090	0.124
	(0.092)	(0.100)	(0.288)	(0.296)	(0.058)	(0.062)	(0.197)	(0.212)	(0.067)	(0.074)	(0.203)	(0.223)
R^2	0.00	0.11	0.00	0.16	0.01	0.05	0.00	0.06	0.01	0.04	0.00	0.05
Panel C: Gender equality and the amounts sent												
Gender altruism	0.004	0.003	0.122	0.158	-0.215**	-0.251**	-0.698***	-0.725**	-0.038	-0.030	-0.080	-0.029
	(0.098)	(0.108)	(0.326)	(0.331)	(0.088)	(0.097)	(0.259)	(0.285)	(0.093)	(0.097)	(0.312)	(0.347)
Sent to a woman	-0.007	-0.019	-0.010	-0.033	-0.068***	-0.082**	-0.299***	-0.337***	-0.039	-0.035	-0.215*	-0.162
	(0.033)	(0.035)	(0.116)	(0.122)	(0.022)	(0.033)	(0.076)	(0.105)	(0.036)	(0.048)	(0.112)	(0.142)
Sent to a man	-0.044	-0.019	-0.061	0.006	0.071***	0.082***	0.164*	0.199**	-0.056	-0.050	0.128	0.137
	(0.031)	(0.034)	(0.118)	(0.120)	(0.027)	(0.029)	(0.096)	(0.099)	(0.039)	(0.045)	(0.130)	(0.149)
R^2	0.03	0.13	0.01	0.18	0.12	0.23	0.16	0.26	0.05	0.14	0.03	0.15
Mean of dep. var.	0.66		1.53		0.66		1.53		0.66		1.53	
SD of dep. var.	0.48		1.51		0.48		1.51		0.48		1.51	
Observations	115	102	115	102	120	106	120	106	120	106	120	106
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Extensive margin is measured as the violence acceptance dummy. Intensive margin is measured as the violence justification index. Gender altruism is an indicator that takes value 1 when the sender in a game sent the same amount to a male and a female recipient, and 0 when the amounts sent to a man and a woman were different. Controls: age, age squared, sex, marriage and religion. Standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 2 Acceptance of violence against women and gender gaps

	Theoretical dictator game				Dictator game				Ultimatum game			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Extensive margin		Intensive margin		Extensive margin		Intensive margin		Extensive margin		Intensive margin	
Gender gap	-0.024	-0.002	-0.021	0.033	0.065***	0.079***	0.236***	0.253***	-0.003	-0.002	-0.177*	-0.151
	(0.027)	(0.028)	(0.092)	(0.095)	(0.018)	(0.023)	(0.072)	(0.077)	(0.030)	(0.038)	(0.092)	(0.117)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	115	102	115	102	120	106	120	106	120	106	120	106
R^2	0.01	0.11	0.00	0.16	0.07	0.18	0.10	0.20	0.00	0.11	0.03	0.15

Notes: Extensive margin is the violence acceptance dummy. Intensive margin is the violence justification index. Controls: age, age squared, sex, marriage and religion. Standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 3 Acceptance of violence against women and gaps in gender equality gaps between games

	Incentivized vs. theoretical dictator dame				Incentivized dictator vs. ultimatum game			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Extensive margin		Intensive margin		Extensive margin		Intensive margin	
Panel A: Constrained egalitarianism								
Incentivized vs. theoretical DG	-0.013	-0.011	-0.166***	-0.177**				
	(0.018)	(0.025)	(0.054)	(0.071)				
Incentivized DG vs. UG					-0.014	0.003	-0.166*	-0.124
					(0.026)	(0.036)	(0.085)	(0.097)
R^2	0.00	0.11	0.07	0.21	0.00	0.11	0.04	0.15
Panel B: Constrained egalitarianism and the amounts sent								
Incentivized vs. theoretical DG	0.064**	0.047	0.035	-0.029				
	(0.029)	(0.034)	(0.101)	(0.113)				
Incentivized DG vs. UG					-0.033	-0.030	-0.221**	-0.225*
					(0.028)	(0.040)	(0.091)	(0.118)
Sent to a woman	-0.134***	-0.130***	-0.344**	-0.331**	-0.047	-0.052	-0.280***	-0.291**
	(0.038)	(0.045)	(0.148)	(0.160)	(0.035)	(0.044)	(0.105)	(0.131)
Sent to a man	0.060**	0.073**	0.134	0.182*	-0.068*	-0.058	0.082	0.113
	(0.029)	(0.030)	(0.105)	(0.101)	(0.037)	(0.042)	(0.110)	(0.127)
R^2	0.10	0.19	0.13	0.25	0.06	0.15	0.09	0.19
Observations	116	103	116	103	120	106	120	106
Controls	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Extensive margin is the violence acceptance dummy. Intensive margin is the violence justification index. DG stands for dictator game. UG stands for ultimatum game. Controls include age, age squared, sex, marriage and religion. Standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 4 Violence against women and attitudes towards gender equality (2SLS estimations)

	Theoretical dictator game		Dictator game		Ultimatum game	
	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage Equality	2nd stage Violence Justification Index	1st stage Equality	2nd stage Violence Justification Index	1st stage Equality	2nd stage Violence Justification Index
Sea (=1)	0.095		0.289***		-0.040	
	(0.097)		(0.101)		(0.103)	
Gender altruism		-8.256		-2.392**		24.081
		(8.815)		(1.174)		(59.402)
Sent to a woman	-0.065	-0.592	-0.022	-0.365***	-0.020	0.250
	(0.048)	(0.727)	(0.034)	(0.120)	(0.047)	(1.610)
Sent to a man	0.114**	1.002	0.002	0.206*	0.191***	-4.345
	(0.046)	(1.144)	(0.033)	(0.110)	(0.049)	(11.149)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	102	102	106	106	106	106
Cragg-Donald Wald F statistic	0.81		7.07		0.13	
Underidentification test	1.03		7.31		0.17	
Weak identification test	0.95		8.28		0.15	
Moreira confidence interval		[-inf, +inf]		[-8.91, -.23]		[-inf, +inf]
Moreira p-val.		0.247		0.032		0.006

Notes: Controls: age, age squared, sex, marriage and religion. Standard errors in parentheses.
Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table 5 Instrumental variables estimation using external and internal instruments

	Theoretical dictator game			Dictator game			Ultimatum game		
	(1) Standard 2SLS	(2) Generated IVs	(3) Generated and external IVs	(4) Standard 2SLS	(5) Generated IVs	(6) Generated and external IVs	(7) Standard 2SLS	(8) Generated IVs	(9) Generated and external IVs
Gender altruism	-8.256	0.379	0.461	-2.392*	-1.497***	-1.817***	24.081	-0.426	-0.425
	(9.384)	(0.410)	(0.404)	(1.247)	(0.527)	(0.500)	(63.080)	(0.455)	(0.456)
Sent to a woman	-0.592	-0.018	-0.013	-0.365***	-0.350***	-0.355***	0.250	-0.169	-0.169
	(0.774)	(0.119)	(0.118)	(0.127)	(0.110)	(0.115)	(1.710)	(0.141)	(0.141)
Sent to a man	1.002	-0.020	-0.029	0.206*	0.202*	0.203*	-4.345	0.211	0.211
	(1.218)	(0.112)	(0.111)	(0.117)	(0.103)	(0.107)	(11.839)	(0.158)	(0.158)
Controls	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Observations	102	102	102	106	106	106	106	106	106
Cragg-Donald Wald F statistic	0.81	7.78	7.08	7.07	1.92	2.43	0.13	8.81	7.92
Underidentification test (Kleibergen-Paap LM statistic)	1.03	23.64	23.65	7.31	19.22	23.91	0.17	24.73	24.76
Weak identification test (Kleibergen-Paap Wald F statistic)	0.95	6.80	6.43	8.28	3.34	4.48	0.15	6.80	6.58
Overidentification (Hansen J statistic)	0.00	15.65	20.26	0.00	7.16	8.15	0.00	11.75	17.67
Hansen J p-value		0.07	0.03		0.62	0.61		0.23	0.06
C statistic			4.92			0.89			5.93
C statistic p-value			0.03			0.35			0.01

Notes: Dependent variable is the violence justification index. Controls: age, age squared, sex, marriage and religion. Standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Figure 1 Field setting

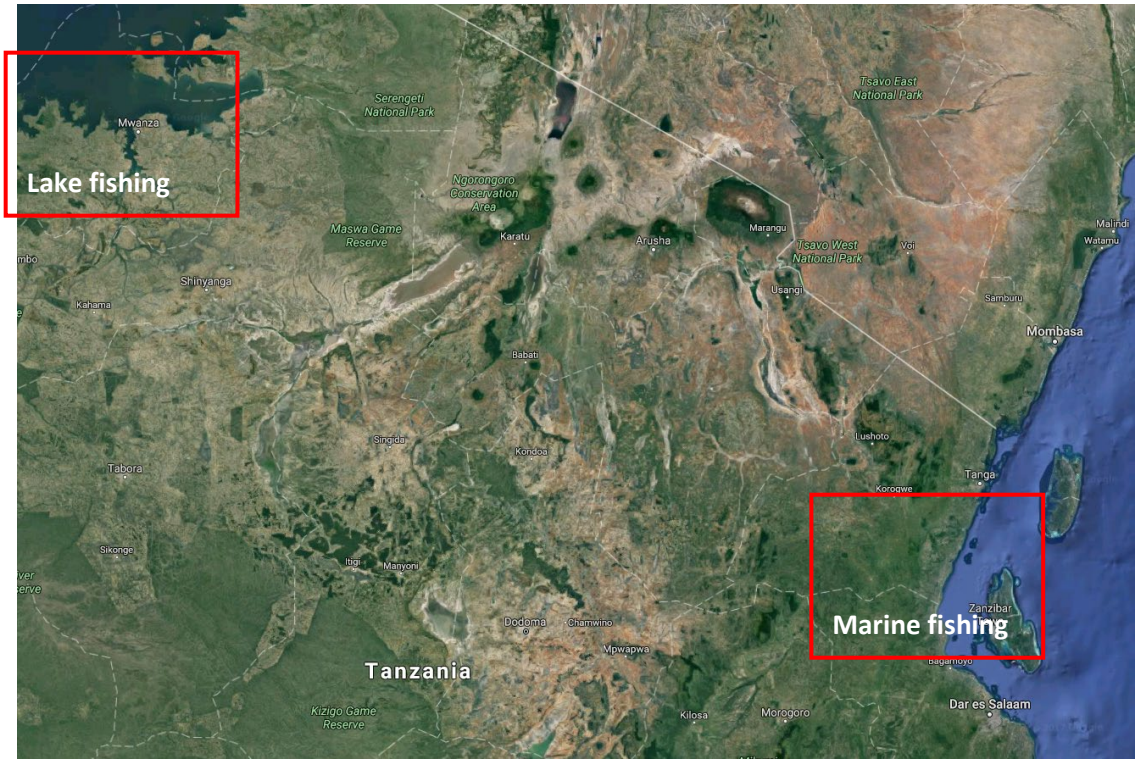
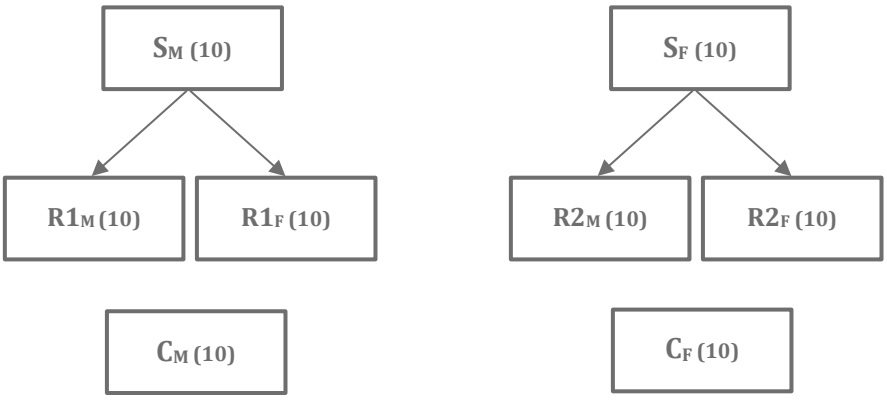


Figure 2 Experimental design: Relationship between participants and their number in each village



Note: S denotes sender and R denotes recipient in the dictator and the ultimatum game. C denotes the control group, that is, those not participating in any game. M denotes male, while F denotes female participants. The number in parentheses is the total number of participants in each category.

APPENDIX A

Experimental protocol

1. Invite 40 men and 40 women per village to participate in the game.
2. Make a list of participants with their names and phone numbers in order in which they arrive to the location.
3. Ask men to draw from the box a paper with a number from 1 to 40.
4. Ask women to draw from the box a paper with a number from 1 to 40.
5. For both group 1 and group 2, men and women are divided into subgroups (A, B, C, D or E) depending on the number they have drawn. This will create two groups and five subgroups, as shown in Table 1. Table 1 shows how the players are paired. In each group, A1 plays with B11 and C21; A2 plays with B12 and C22, etc. The participants do not know this.

Table A1 Groups and player numbers (each row shows how A and B and A and C are paired)

Group 1						Group 2				
M Player A1	W Player A2	M Player B1	W Player C1	M Control D1	W Control E1	W Player A2	W Player B2	M Player C2	M Control D2	W Control E2
1	1	11	21	31	36	1	11	21	36	31
2	2	12	22	32	37	2	12	22	37	32
3	3	13	23	33	38	3	13	23	38	33
4	4	14	24	34	39	4	14	24	39	34
5	5	15	25	35	40	5	15	25	40	35
6	6	16	26			6	16	26		
7	7	17	27			7	17	27		
8	8	18	28			8	18	28		
9	9	19	29			9	19	29		
10	10	20	30			10	20	30		

6. The instruction talk should explain that there will be 2 or 3 games, depending on the lottery, and an interview after the last game. There will also be some who do not play any game (control group, players D and E). They only have to fill in the questionnaire.
7. The instruction will explain how to fill in the questionnaire, especially questions in which we need an answer for several sub-questions.
8. Explain that the illiterate will have a face-to-face interview and there could be some waiting.
9. The control group participants (first 4 players D and E) watch the video and get the questionnaire after watching the video. The remaining control group participants get the questionnaires immediately after the numbers lottery, and fill it in immediately. Before they leave, questionnaires are checked for completion and they receive the show-up fee. All the rest (players A, B and C) get the questionnaire after the last game.
10. The instructor demonstrates how the dictator and the ultimatum games are played. Explain that all players A are paired randomly with both a man and a woman from the village. Also that if player A is a man, then player B is also a man, and player C is a woman. If player A is a woman, then player B is also a woman, and player C is a man. Explain that other than that, no one will know who is matched with whom.
11. To check if the participants understood the game, they are randomly tested by the experimenter. Experimenter gives an example and randomly selects a few participants to give the answer.

12. Subgroups are taken to separate locations to assure anonymity (players A are separated from players B and C). Players A1 stand with D1 and D2. Players A2 stand with E1 and E2. Players B1 stand with C2. Players C1 stand with B2.
13. **Game 1**: Dictator. Player A receives 4 envelopes, 2 of them with 10,000 TZS in notes of 1,000 TZS, and 2 empty envelopes. Player A decides how to share 10,000 TZS with player B, and how to share 10,000 TZS with player C, depositing the amounts in each empty envelope marked B and C. Player A puts each envelope in the corresponding B or C box.
    NB: All amounts left for players B and C should be recorded in B and C rooms, before they are given to players B and C (who get the envelopes only after the questionnaire has been completed).
14. **Game 2**: Ultimatum. Player A receives a large envelope with two small empty envelopes and two blank checks. Player A writes down the amounts for players B and C on the checks. Player B and player C then decide to accept or reject the offer, and mark that on the check. Player A gets the check back (to be cashed in at the end) and a questionnaire to fill in. Players B and C get a check stating the amount to be cashed in and a questionnaire to be filled in.
15. Everybody plays anonymously – no several persons in the 'private' space.
16. Video. The first 3 players A, B and C in both groups watch video 1 (on violence against women) and the next 3 players A, B and C in both groups watch video 2 (on violence against albinos). The first 2 players D and E watch video 1 and the next 2 players D and E watch video 2.
17. The rest of players start filling in the questionnaire. After watching the video, the remaining players fill in the questionnaire.
18. It is important that participants do not talk with each other while they are filling in the questionnaire (for that, sit participants sufficiently apart from each other, which can also help to avoid peaking).
19. Before giving the participation fee, check whether all the questionnaire is filled in, and record the number of the participant who has received the fee on the participation list.
20. Give the envelopes from the dictator game, and cash the checks from the ultimatum game.

Instructions for the experiment[1]

Instructions for Group 1

Activity 1 Instructions

Task: Decide how much money to share with a random woman and a man from the village.

1. You have been paired with two persons from the village. One of the persons is female and the other is male. It is not known whom you are paired with. Imagine any woman or any man from your village. Just as you don't know who they are, your identify will also not be known to them.
2. You have been allocated two times 10,000 shillings to share with a woman and a man you are paired with.
3. Open the first large envelope you have received today. In there you will find four small envelopes, two of which contain 10 one thousand shilling bills and two other are empty.
4. Decide how many bills (if any) of the 10,000 you will send to the man and put that amount in the empty envelope marked B.
5. Decide how many bills (if any) of the 10,000 you will send to the woman and put that amount in the empty envelope marked C.
6. The rest of the money is yours to take from the experiment.
7. Place the envelopes in appropriate boxes marked B and C.
8. Go back to your seat and await further instructions from the experimenter.
9. After all players have deposited the envelopes in the boxes B and C, the assistant will record the number on the envelope and the amount of money in each envelope, reseal the envelopes and take them to the players you have been paired with.

Activity 2 Instructions

Task: Decide how much money to share with a random woman and a man from the village who then decide whether to accept or decline the proposed amount. If they accept, the money is shared as proposed. If they reject, nobody gets any payment.

1. You have been paired with two persons from the village. One of the persons is female and the other is male. Their identity is not known to you and your identity is not known to them. They only know your sex, i.e. whether you are a man or a woman.
2. You have been allocated two times 10,000 shillings to share with a woman and a man you are paired with.
3. Open the second large envelope you have received today. In there you will find two small envelopes and two checks which you need to fill in.
4. Decide how many bills (if any) of the 10,000 you will send to the man and write that amount on the check B.
5. Decide how many bills (if any) of the 10,000 you will send to the woman and write that amount on the check C.
6. The assistant will take the checks to the persons you have been paired with and inform you of their decision to accept or reject your proposed amount.
7. If they accept your proposal, the money is shared as proposed. If they reject, nobody gets any payment. You will get paid after filling in the questionnaire according to the amounts written on the check.
8. Go back to your seat and await further instructions from the experimenter.

[1] We show, as an example, the instructions for players from one of the groups. The instructions for the second group follow a similar pattern.

Figure A1 Questionnaire-based dictator game

a. Decide how you would share 10,000 shilling with this man

1. Your share _____TZS
2. His share_____ TZS

b. Decide how you would share 10,000 shilling with this woman

1. Your share _____TZS
2. Her share_____ TZS

Figure A2 The check used in the ultimatum game

Man ☐ Woman ☐	Man ☐ Woman ☐ ☐ TZS Accept ☐ Reject ☐ What (in general) is the minimum amount you will accept? _____TZS

APPENDIX B

Table B1 Summary statistics

	Sea					*Lake*					Difference	t-value
	Mean	SD	Min	Max	Obs.	Mean	SD	Min	Max	Obs.		
WOMEN												
Gender altruism indicator TD	0.77	0.43	0	1	30	0.67	0.48	0	1	30	0.10	0.85
Gender altruism indicator DG	0.47	0.51	0	1	30	0.27	0.45	0	1	30	0.20	1.62*
Gender altruism indicator UG	0.60	0.50	0	1	30	0.63	0.49	0	1	30	-0.03	-0.26
Sent to W (‘000) TD	4.32	1.47	0	5	28	4.50	1.45	0	6	29	-0.18	-0.48
Sent to M (‘000) TD	3.96	1.54	0	5	28	3.88	1.89	0	7	30	0.07	0.16
Sent to W (‘000) DG	2.73	1.66	0	5	30	2.20	1.42	1	5	30	0.53	1.34*
Sent to M (‘000) DG	3.13	1.68	0	5	30	3.47	1.91	0	7	30	-0.33	-0.72
Sent to W (‘000) UG	5.97	1.30	5	10	30	5.66	1.43	3	10	30	0.31	0.87
Sent to M (‘000) UG	5.43	0.77	5	7	30	6.23	1.41	5	9	30	-0.80	-2.73***
Gender gap	-0.36	0.73	-2	0	28	-0.62	1.95	-5	4	29	0.26	0.66
Constrained egalitarianism TD-DG	-1.46	2.20	-5	5	28	-2.26	2.42	-4	5	29	0.80	1.30*
Constrained egalitarianism DG-UG	-1.30	1.99	-4	5	30	-2.14	1.58	-4	1	30	0.84	1.81**
Violence acceptance indicator	0.67	0.48	0	1	30	0.83	0.38	0	1	30	-0.17	-1.49*
Violence justification index	1.73	1.72	0	5	30	2.03	1.40	0	5	30	-0.30	-0.74
Violence justified if wife												
goes out without telling the husband	0.41	0.50	0	1	29	0.52	0.51	0	1	29	-0.10	-0.78
neglects the children	0.52	0.51	0	1	27	0.66	0.48	0	1	29	-0.14	-1.03
argues with the husband	0.52	0.51	0	1	27	0.43	0.50	0	1	30	0.09	0.63
refuses to have sex with the husband	0.30	0.47	0	1	27	0.32	0.48	0	1	28	-0.03	-0.20
burns the food	0.14	0.36	0	1	28	0.17	0.38	0	1	29	-0.03	-0.30
MEN												
Gender altruism indicator TD	0.63	0.49	0	1	30	0.40	0.50	0	1	30	0.23	1.83**
Gender altruism indicator DG	0.50	0.51	0	1	30	0.30	0.47	0	1	30	0.20	1.59*
Gender altruism indicator UG	0.57	0.50	0	1	30	0.37	0.49	0	1	30	0.20	1.56*
Sent to W (‘000) TD	4.78	1.22	2	8	30	4.86	1.36	0	7	29	-0.08	-0.24
Sent to M (‘000) TD	4.73	1.17	2	8	30	4.28	1.46	2	7	29	0.46	1.33*
Sent to W (‘000) DG	4.47	1.72	1	9	30	4.67	1.40	1	8	30	-0.20	-0.49
Sent to M (‘000) DG	3.53	1.43	0	5	30	3.20	1.35	0	5	30	0.33	0.93
Sent to W (‘000) UG	5.15	1.20	3	8	30	4.90	1.45	1	8	30	0.25	0.73
Sent to M (‘000) UG	5.53	0.94	4	8	30	6.00	1.20	4	8	30	-0.47	-1.68*
Gender gap	-0.05	1.37	-3	4	30	-0.61	1.87	-4	4	28	0.56	1.30*
Constrained egalitarianism TD-DG	-0.27	1.91	-4	4	30	0.41	2.18	-4	4	29	-0.68	-1.28
Constrained egalitarianism DG-UG	-0.38	1.55	-3	3	30	-0.43	1.04	-3	1	30	0.05	0.15
Violence acceptance indicator	0.43	0.50	0	1	30	0.63	0.49	0	1	30	-0.20	-1.56*
Violence justification index	0.90	1.27	0	4	30	1.27	1.41	0	5	30	-0.37	-1.06
Violence justified if wife												

goes out without telling the husband	0.17	0.38	0	1	30	0.39	0.50	0	1	28	-0.23	-1.96*
neglects the children	0.33	0.48	0	1	30	0.52	0.51	0	1	29	-0.18	-1.43*
argues with the husband	0.23	0.43	0	1	30	0.26	0.45	0	1	27	-0.03	-0.22
refuses to have sex with the husband	0.07	0.26	0	1	29	0.11	0.31	0	1	28	-0.04	-0.50
burns the food	0.10	0.31	0	1	29	0.07	0.26	0	1	28	0.03	0.42

Notes: DG denotes dictator game, UG denotes ultimatum game and TD denotes theoretical dictator game. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table B2 Balance tests for key control variables, by gender

		Number	Men	Women	Difference	t-value
Sea	Age	53	35.68	38.92	-3.24	-0.94
	School attendance	60	0.87	0.90	-0.03	-0.40
	Household members	58	4.25	5.07	-0.82	-1.67*
	Married	60	0.27	0.23	0.03	0.29
	Working	60	0.90	0.57	0.33	3.10***
	Muslim	60	0.73	0.77	-0.03	-0.29
	Catholic	60	0.17	0.13	0.03	0.36
	Protestant	60	0.03	0.07	-0.03	-0.58
	Other religion	60	0.07	0.03	0.03	0.58
Lake	Age	58	35.34	35.45	-0.10	-0.04
	School attendance	60	0.90	0.83	0.07	0.75
	Household members	58	5.00	5.60	-0.60	-0.84
	Married	60	0.30	0.23	0.07	0.58
	Working	60	0.87	0.60	0.27	2.41**
	Muslim	59	0.31	0.27	0.04	0.36
	Catholic	59	0.48	0.33	0.15	1.16
	Protestant	59	0.03	0.23	-0.20	-2.29**
	Other religion	59	0.17	0.17	0.01	0.06

Notes: Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table B3 Balance tests for key control variables, by location

		Number	Sea	Lake	Difference	t-value
Men	Age	57	35.68	35.34	0.33	0.11
	School attendance	60	0.87	0.90	-0.03	-0.40
	Household members	56	4.25	5.00	-0.75	-1.23
	Married	60	0.27	0.30	-0.03	-0.28
	Working	60	0.90	0.87	0.03	0.40
	Muslim	59	0.73	0.31	0.42	3.53***
	Catholic	59	0.17	0.48	-0.32	-2.71***
	Protestant	59	0.03	0.03	-0.00	-0.02
	Other religion	59	0.07	0.17	-0.11	-1.25
Women	Age	54	38.92	35.45	3.47	1.03
	School attendance	60	0.90	0.83	0.07	0.75
	Household members	60	5.07	5.60	-0.53	-0.87
	Married	60	0.23	0.23	0.00	0.00
	Working	60	0.57	0.60	-0.03	-0.26
	Muslim	60	0.77	0.27	0.50	4.40***
	Catholic	60	0.13	0.33	-0.20	-1.85*
	Protestant	60	0.07	0.23	-0.17	-1.83*
	Other religion	60	0.03	0.17	-0.13	-1.74*

Notes: Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table B4 Balance tests for key control variables, by the role in the incentivized dictator and the ultimatum games (sender vs. receiver)

		Number	Receiver	Sender	Difference	t-value
Men	Age	224	38.26	35.51	2.75	1.51*
	School attendance	240	0.92	0.88	0.04	0.92
	Household members	226	5.74	4.63	1.11	2.35**
	Married	240	0.41	0.28	0.12	1.70*
	Working	240	0.88	0.88	0.00	0.00
	Muslim	238	0.49	0.53	-0.03	-0.45
	Catholic	238	0.33	0.32	0.01	0.11
	Protestant	238	0.04	0.03	0.01	0.36
	Other religion	238	0.13	0.12	0.02	0.30
Women	Age	216	34.47	37.06	-2.59	-1.49*
	School attendance	240	0.88	0.87	0.02	0.34
	Household members	235	5.46	5.33	0.13	0.34
	Married	240	0.36	0.23	0.13	1.83*
	Working	240	0.61	0.58	0.02	0.30
	Muslim	238	0.48	0.52	-0.04	-0.52
	Catholic	238	0.35	0.23	0.11	1.65*
	Protestant	238	0.03	0.15	-0.12	-3.26***
	Other religion	238	0.14	0.10	0.04	0.80

Notes: Significance levels: * p<0.10, ** p<0.05, *** p<0.01.